


<b>AWARD/CONTRACT</b>		1. THIS CONTRACT IS A RATED ORDER UNDER DPAS (15 CFR 700)		RATING		PAGE OF PAGES 1   2	
2. CONTRACT (Proc. Inst. Ident.) NO. EP-C-17-031/68HERC20F0036				3. EFFECTIVE DATE See Block 20C		4. REQUISITION/PURCHASE REQUEST/PROJECT NO. See Schedule	
5. ISSUED BY CODE		CAD		6. ADMINISTERED BY (If other than Item 5) CODE			
CAD US Environmental Protection Agency 26 West Martin Luther King Drive Mail Code: W136 Cincinnati OH 45268-0001							
7. NAME AND ADDRESS OF CONTRACTOR (No., street, country, State and ZIP Code)  TETRA TECH, INC. Attn: George Townsend 10306 EATON PL STE 340 FAIRFAX VA 22030				8. DELIVERY <input type="checkbox"/> FOB ORIGIN <input checked="" type="checkbox"/> OTHER (See below)			
				9. DISCOUNT FOR PROMPT PAYMENT			
				10. SUBMIT INVOICES (4 copies unless otherwise specified) TO THE ADDRESS SHOWN IN		ITEM	
CODE 198549560		FACILITY CODE					
11. SHIP TO/MARK FOR CODE		OW		12. PAYMENT WILL BE MADE BY CODE		RTP FMC	
OW/OST/HECD US Environmental Protection Agency 1200 Pennsylvania Avenue, NW Washington DC 20460		RTP Finance Center US Environmental Protection Agency RTP-Finance Center (AA216-01) 109 TW Alexander Drive www2.epa.gov/financial/contracts Durham NC 27711					
13. AUTHORITY FOR USING OTHER THAN FULL AND OPEN COMPETITION: <input type="checkbox"/> 10 U.S.C. 2304 (c) ( ) <input checked="" type="checkbox"/> 41 U.S.C. 3304 (a) ( )				14. ACCOUNTING AND APPROPRIATION DATA See Schedule			
15A. ITEM NO	15B. SUPPLIES/SERVICES			15C. QUANTITY	15D. UNIT	15E. UNIT PRICE	15F. AMOUNT
	Continued						
15G. TOTAL AMOUNT OF CONTRACT						\$74,635.00	
<b>16. TABLE OF CONTENTS</b>							
(X)	SEC.	DESCRIPTION	PAGE(S)	(X)	SEC.	DESCRIPTION	PAGE(S)
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	B	SUPPLIES OR SERVICES AND PRICES/COSTS		PART III - LIST OF DOCUMENTS, EXHIBITS AND OTHER ATTACH.			
	C	DESCRIPTION/SPECS./WORK STATEMENT			J	LIST OF ATTACHMENTS	
	D	PACKAGING AND MARKING		PART IV - REPRESENTATIONS AND INSTRUCTIONS			
	E	INSPECTION AND ACCEPTANCE			K	REPRESENTATIONS, CERTIFICATIONS AND OTHER STATEMENTS OF OFFERORS	
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<b>CONTRACTING OFFICER WILL COMPLETE ITEM 17 (SEALED-BID OR NEGOTIATED PROCUREMENT) OR 18 (SEALED-BID PROCUREMENT) AS APPLICABLE</b>							
17. <input checked="" type="checkbox"/> CONTRACTOR'S NEGOTIATED AGREEMENT (Contractor is required to sign this document and return _____ copies to issuing office.) Contractor agrees to furnish and deliver all items or perform all the services set forth or otherwise identified above and on any continuation sheets for the consideration stated herein. The rights and obligations of the parties to this contract shall be subject to and governed by the following documents: (a) this award/contract, (b) the solicitation, if any, and (c) such provisions, representations, certifications, and specifications, as are attached or incorporated by reference herein. (Attachments are listed herein.)				18. <input type="checkbox"/> SEALED-BID AWARD (Contractor is not required to sign this document.) Your bid on Solicitation Number 68HERC19R0080 , including the additions or changes made by you which additions or changes are set forth in full above, is hereby accepted as to the items listed above and on any continuation sheets. This award consummates the contract which consists of the following documents: (a) the Government's solicitation and your bid, and (b) this award/contract. No further contractual document is necessary. (Block 18 should be checked only when awarding a sealed-bid contract.)			
19A. NAME AND TITLE OF SIGNER (Type or print)				20A. NAME OF CONTRACTING OFFICER Andrea Dehne			
19B. NAME OF CONTRACTOR		19C. DATE SIGNED		20B. UNITED STATES OF AMERICA		20C. DATE SIGNED	
BY  (Signature of person authorized to sign)				BY  (Signature of the Contracting Officer)		ELECTRONIC SIGNATURE  10/28/2019	

## CONTINUATION SHEET

REFERENCE NO. OF DOCUMENT BEING CONTINUED  
EP-C-17-031/68HERC20F0036PAGE OF  
2 2

NAME OF OFFEROR OR CONTRACTOR

TETRA TECH, INC.

ITEM NO. (A)	SUPPLIES/SERVICES (B)	QUANTITY (C)	UNIT (D)	UNIT PRICE (E)	AMOUNT (F)
0001	<p>DUNS Number: 198549560 TOCOR: Elizabeth Resek Max Expire Date: 10/30/2020 Delivery: 10/30/2020 Period of Performance: 11/01/2019 to 10/30/2020</p> <p>Fully Funded Firm Fixed Price (FFP) Task Order</p> <p>Task Order Issuance Line Item: Technical Support for EPA/ORD Ecological Assessment Programs Requisition No: PR-OW-19-00585, PR-OW-19-00786</p> <p>Accounting Info: 19-20-B-28H-000BD4X20-2505-1928CHH034-001 BFY: 19 EFY: 20 Fund: B Budget Org: 28H Program (PRC): 000BD4X20 Budget (BOC): 2505 DCN - Line ID: 1928CHH034-001 Funding Flag: Partial Funded: \$74,635.00</p> <p>Accounting Info: 19-20-B-28H-000BD4X20-2505 BFY: 19 EFY: 20 Fund: B Budget Org: 28H Program (PRC): 000BD4X20 Budget (BOC): 2505 Funding Flag: Partial Funded: \$0.00</p> <p>Delivery-Invoice Payment Schedule shall not exceed a frequency greater than once a month and 90% of the task order price. Acceptance for invoicing is based on deliverable approval by the TOCOR. For efficient processing IAW FAR clause 52.232-32, performance based payment invoicing amounts will not be submitted until the TOCOR provides deliverable approval. The TOCOR will notify Tetra Tech within 14 days of submission of a deliverable of EPAs intention to approve or disapprove.</p> <p>TOCOR: Elizabeth Resek/(202)566-1228/resek.elizabeth@epa.gov ALTOCOR: Reuben Baris/(202)566-2683/baris.reuben@epa.gov</p>				74,635.00

## PERFORMANCE WORK STATEMENT

Tetra Tech, Inc.

Contact #EP-C-17-031

PR-R5-20-00543/SOL 68HERC21R0003

Task Order No. 68HERC21F0036

**TITLE:** Illinois Environmental Protection Agency (IEPA) Lake Index Recalibration

**SHORT TITLE:** IEPA Lake Index Recalibration

<b>Task Order COR (TOCOR)</b>	<b>Alternate Task Order COR (ALTOCOR)</b>
Name: Donna Keclik Office: U.S. EPA Region 5 77 W. Jackson Blvd. Mail Code: (WW-16J) Chicago, IL 60604 Phone: 312-886-6766  Email: <a href="mailto:keclik.donna@epa.gov">keclik.donna@epa.gov</a>	Name: Belinda Montgomery Office: U.S. EPA, Region 5 77 W, Jackson Blvd. Mail Code: (WW-16J) Chicago, IL 60604 Phone: 312-886-5949  Email: <a href="mailto:montgomery.belinda@epa.gov">montgomery.belinda@epa.gov</a>

**PERIOD OF PERFORMANCE:** Date of award through 24 months following Task Order award.

### Background

Bioassessment programs in many states have developed indexes and models, such as the Index of Biological Integrity (IBI) and the Biological Condition Gradient (BCG), to use in assessment and communication to stakeholders and the public. They are increasingly being used as a basis for biological criteria or objectives in state water quality standards, such that waters of a certain designated use are expected to meet a biological criterion of a minimum score or value of an index. In 2013, a macroinvertebrate Index of Biological Integrity (mIBI) for lakes was developed for IEPA. EPA Region 5 contracted with Tetra Tech, under contract number EP-C12055 – task order 00006 to develop the mIBI for IEPA. The index was developed using data collected from 2008 to 2012. This contract has been completed. In the last several years, IEPA collected 85 additional samples, representing 47 additional lakes and will be using this new data to validate and update the index.

### Scope of Work:

The purpose of the Task Order is to collaborate with IEPA to validate the lake mIBI by using the new lake data and recalibrate the lake mIBI, and to also standardize future efforts and index calculations. The Task Order requires the contractor to develop a tool for calculating the Index scores for the lake mIBI for IEPA. This tool will allow IEPA to determine if a lake is meeting certain conditions and will help the state develop their impaired waters list and determine where actions need to be taken to bring the lake into compliance.

### **Task 1: Communications and Administration (Section 3 of Contract Level PWS)**

The contractor shall provide management and administrative support for the project throughout its duration. The contractor shall participate in monthly calls and/or as deemed necessary with the TOCOR, IEPA, and other relevant EPA staff to collaborate items such as; points of contact, roles and responsibilities, Quality Assurance Project Plan (QAPP) protocols, timelines, the schedule of benchmarks, milestones and deliverables, establish dates and times for monthly calls and monthly technical progress reports and general task order administrative and technical information

#### **SubTask 1.1: Communication/Kickoff-Call**

The contractor shall communicate with the TOCOR within five (5) days of award to setup a kickoff-call. The contractor and the TOCOR shall agree on a time to have a kickoff-call with all parties to discuss points of contact, roles and responsibilities, Quality Assurance Project Plan (QAPP) protocols, schedule, and deliverables, establish dates and times for monthly calls and monthly progress reports and general task order administrative and technical information.

#### **SubTask 1.2: Communication/monthly calls**

The contractor shall participate in monthly calls with the TOCOR and IEPA to go over the status of the tasks and any issues or questions which need to be considered with all parties. These calls shall be set to an agreed time as discussed in the kick-off call.

#### **SubTask 1.3: Communication/ progress reports**

The contractor shall submit progress reports that will align with billing requests or when significant activity has occurred on the ~~on the~~ Task Order. The reports shall identify what actions have been taken for the time frame and if there were any issues during this billing time or any issues foreseen in the next billing action/deliverables.

### **Task 1 Deliverables**

<b>Tasks</b>	<b>SubTasks</b>	<b>Deliverable</b>	<b>Due</b>
<b>1</b>	<b>1.1</b>	<b>Communication/Kick-off call</b>	<b>Within five (5) days of TO Award</b>
<b>1</b>	<b>1.2</b>	<b>Monthly Calls</b>	<b>Monthly and/or as requested by the TOCOR</b>
<b>1</b>	<b>1.3</b>	<b>Progress Reports</b>	<b>Progress reports which correlate to the billing, outlining what actions/deliverables are in the billing time frame.</b>



## **Task 2: Quality Assurance Project Plan (QAPP) (Section 5 of Contract Level PWS)**

All actions conducted under this task order shall be performed pursuant to an EPA-approved Quality Assurance Project Plan (QAPP). The contractor shall provide a QAPP that fully addresses the use of secondary data for purposes of this task order. The process for the QAPP development and review is:

- Within fifteen (15) business days after task order award, The contractor shall submit for EPA review a draft QAPP documenting how quality assurance (QA) and quality control (QC) shall be applied to the compilation, evaluation, analysis and use of environmental data.
- EPA will review the draft QAPP, and provide the Contractor with written approval or written comments within 45 days after receipt of Draft QAPP. (what is EPAs timeframe? e.g., within 5 business days after receipt of draft QAPP).
- The contractor shall submit a final QAPP within five (5) business days of receipt of the written comments on the draft QAPP, unless otherwise instructed by the TOCOR.

### **QAPP Requirements**

The QAPP shall be consistent with the use of existing (secondary) data and data collected by IEPA under their Quality Management Plan (QMP) (Illinois QMP

<https://www2.illinois.gov/epa/topics/water-quality/watershed-management/wqmp/Pages/default.aspx#:~:text=The%20Illinois%20Water%20Quality%20Management,point%20and%20nonpoint%20source%20pollution>). The QAPP shall provide enough detail to clearly describe objectives of the project supported by the task order, the type of data compiled or used under this task order to support the project objectives; the quality objectives needed to ensure that the data support the project objectives; and the quality assurance (QA) and quality control (QC) activities to be performed to ensure that any results obtained are documented and are of the type, quality, transparency, and reproducibility needed.

#### **SubTask 2.1: Draft QAPP**

The draft QAPP as a Microsoft Word (2016) document shall be submitted for review and approval by the TOCOR and the EPA QA Officer fifteen (15) days after TO award.

#### **SubTask 2.2: Final QAPP**

Final QAPP addressing TOCOR's and QA officer's comments on the QAPP due to EPA five (5) business days after receiving comments as a Microsoft Word document Contractor shall not begin work on the TO until receiving in writing from the TOCOR that EPA has approved the QAPP.

## Task 2 Deliverables

Tasks	SubTasks	Deliverable	Due
2	2.1	Draft QAPP	Due fifteen (15) days of TO Award
2	2.2	Final QAPP	Due ten (10) business days of receipt of the written comments on the draft QAPP

## Task 3. Data Organization (Section 2 Task Area 1, Task Area 4 of Contract Level PWS)

Data from the 47 new lakes and 85 sampling events shall be included in the new analyses. For some analyses, the new data shall be pooled with data 2008-2012 data previously compiled for lakes. IEPA data are mostly available in Microsoft Access tables or Microsoft Excel. Any IEPA data not in Microsoft Access the contractor shall be transferred in Microsoft Access. Site information and shoreline-habitat surveys are in Microsoft Excel spreadsheets. This data shall be submitted to the Contractor by IEPA. The shoreline-habitat surveys shall be compiled and summarized as the Riparian Disturbance Habitat Index and the Littoral and Riparian Complexity Habitat Index by the contractor. The contractor shall use the template in Attachment A under this Task Order which was developed for IEPA. The contractor shall compile the data, applying and checking the index calculations, and associating the summary data with the lakes.

Basic site information shall be tabulated and related to sample metadata. Sample metadata shall be associated with sample results, and result parameters (water quality, habitat, and biology) shall be specified in descriptive tables. Macroinvertebrate subsamples shall be composited into whole-lake samples laid out in *Development of a Multimetric Macroinvertebrate Index for Lakes in Illinois* (Attachment B) or according to new compositing procedures to be determined in collaboration with EPA and IEPA. Macroinvertebrate metrics shall be calculated from appropriately composited sample taxa lists and taxa traits (feeding groups, habit, voltinism, and pollution tolerance, as available). Taxa traits are already established but shall be checked for new taxa without attributes and for new attributes previously unassigned. Metric calculations shall be in Access.

### **SubTask 3.1: Compilation of Metric Calculation**

The contractor shall update the existing 2008-2012 data set to develop IEPA's mIBI metric with the new data and information submitted from IEPA. This shall include 47 new lake data and site information for shoreline-habitat surveys.

## Task 3 Deliverables

Tasks	SubTasks	Deliverable	Due
3	3.1	Compilation of Metric Calculation in Access or R.	Due five (5) months of TO Award

## Task 4 GIS Analysis (Section 2 Task Area 4 Contract Level PWS)

The watersheds of the 47 new lakes shall be delineated and checked for accuracy so that source, stressors, and natural environmental factors in the contributing basin can be related to the disturbance gradient and natural site classes. The disturbance gradient that was established using the 2008-2012 data set for lake macroinvertebrate index development shall be applied for the new lakes, identifying categories of Reference, Near Reference, Other, Stressed, and Extremely Stressed. This disturbance gradient was developed based on geographic-information-system (GIS) variables, special activities, and shoreline-habitat indexes. The GIS variables used were percent imperviousness of the whole catchment, percent low, medium, and high development land uses, percent crops and pasture use, count of road and stream crossings per 100 acres, and length of roads in miles per 100 acres. The special activities used were gravel and coal mines near the lake and point sources in the catchment weighted by distance. The shoreline-habitat indexes included the Riparian Disturbance Habitat Index and the Littoral and Riparian Complexity Habitat Index. The disturbance criteria shall be applied to the new lakes as they were to the lakes in the calibration data set. If new variables are available and deemed important to the analysis, they shall be discussed with EPA and IEPA and shall be applied to all lakes (new and previous) as appropriate.

**SubTask 4.1: Compilation of GIS data**

The contractor shall update the 2008-2012 GIS dataset that was used to develop IEPA's mIBI metric with the new data and information submitted from IEPA. This shall include 47 new lake data and site information for shoreline-habitat surveys.

**Task 4 Deliverables**

<b>Tasks</b>	<b>SubTasks</b>	<b>Deliverable</b>	<b>Due</b>
<b>4</b>	<b>4.1</b>	<b>Compilation of new GIS data in MS Access</b>	<b>Due eight (8) months of TO Award</b>

**Task 5. Validate the Lake Macroinvertebrate IBI (Section 2 Task Area 4 Contract Level PWS)**

The existing lake mIBI shall be tested for effective discrimination of macroinvertebrate condition along the disturbance gradient, including correlation with all disturbance categories (Reference, Near Reference, Other, Stressed, and Extremely Stressed). This shall include calculation of the mIBI according to existing application guidelines, associating mIBI scores with site disturbance categories, calculating the discrimination efficiency (DE) of the index and the component metrics, and plotting metric and index distributions along the disturbance gradient. If the DE of the index in new lakes is comparable to the DE of the index from the 2008-2012 data set index, then the index will be validated and can be applied in ongoing assessments. If the index is validated adequately while individual metrics are not strong performers or if the index cannot be validated, then the inadequate performance shall be discussed with EPA and IEPA. At that time, a decision shall be made to accept the validated index, accept the index with reduced DE, or reject the index as outdated and due for re-calibration.

### **SubTask 5.1: Index Review**

The contractor shall review the mIBI index using the new data and determine if the index is acceptable or needs to be updated.

#### **Task 5 Deliverables**

<b>Tasks</b>	<b>SubTasks</b>	<b>Deliverable</b>	<b>Due</b>
<b>5</b>	<b>5.1</b>	<b>Confirmation of correlation with all disturbance categories</b>	<b>Due eleven (11) months of TO Award</b>

### **Task 6 Evaluation of Sampling Effects on Metric and Index Performance (Section 2 Task Area 1 of Contract Level PWS)**

Sampling for the lake macroinvertebrate index is thorough and intensive. It was suggested by IEPA that the profundal zone was not providing information that improved the index performance. It is further hypothesized that processing samples for separate habitats might not provide more information than would be gained from assessment of a whole lake composite sample. Compositing prior to sample processing would reduce sample processing costs and time. In addition, if additional habitats are found to be redundant or unnecessary for efficient assessment, the sampling protocols might be streamlined to reduce time in the field.

An analysis shall be conducted in which the samples shall be virtually composited and resampled in different configurations to test the idea that a whole-lake composite or specific habitat composites would yield precise and accurate assessments. If DE, precision, or accuracy are greatly reduced by such experimental compositing, then the trade-offs between cost/time and performance shall be discussed with EPA and IEPA. The evaluation of sampling effects would address the existing mIBI and a recalibrated mIBI (Task 7).

### **SubTask 6.1: review data in different configurations for whole-lake sample**

The contractor shall review the mIBI index using the new data resampled in different configurations to test the idea that a whole-lake composite or specific habitat composites would yield precise and accurate assessments. Output show the different relationships.

#### **Task 6 Deliverables**

<b>Tasks</b>	<b>SubTasks</b>	<b>Deliverable</b>	<b>Due</b>
<b>6</b>	<b>6.1</b>	<b>Review of the data resampled in different configurations to test the idea that a whole-lake composite or specific habitat composites would yield precise and accurate assessments. Output show the different relationships.</b>	<b>Due fourteen (14) months of TO Award</b>

### **Task 7 – Recalibration of the lake mIBI (Section 2 Task Area 5 of Contract Level PWS)**

If the mIBI is determined to underperform in the validation (Task 4), then a recalibration shall be conducted using the complete data set. Recalibration shall follow similar steps that were used in the original calibration, to include checking the site classification for adherence to the original classification, calculation of a broad range of metrics, determining metric sensitivity along the disturbance gradient, selecting sensitive and precise metrics, scoring metrics on a 100 point scale, and combining the best set of metrics into a revised mIBI. Performance of the index will be characterized in terms of accuracy and precision. Each step shall be presented for U.S. EPA and IEPA review and approval.

The recalibration task is contingent on performance of the mIBI in the new sites. If recalibration is not necessary, contingent tasks may be performed. The proposed contingent tasks shall include examination of index application scenarios and possible impairment thresholds. The examination shall include interpretations of possible thresholds in the context of lake assessments. Other contingent tasks shall include identification data gaps and additional lakes to sample to fill those gaps. For example, if a certain type of reference lake is lacking sufficient reference sites for calibration or validation, new lakes shall be identified using GIS data.

#### **SubTask 7.1: Recalibration of the mIBI index**

The contractor shall review all the data and information compiled in Tasks 3-6 of this Task Order and determine if the data demonstrates that the metric is valid for the state to make determinations on the water quality of the lake. If changes are needed the contractor shall update the index. If the index is valid the contractor shall indicate that the index is still in good standings and that no changes need to be made.

#### **Task 7 Deliverables**

<b>Tasks</b>	<b>SubTasks</b>	<b>Deliverable</b>	<b>Due</b>
<b>7</b>	<b>7.1</b>	<b>Recalibration of all or part of the index.</b>	<b>Due sixteen (16) months of TO Award</b>

#### **Task 8 - Index calculation tool in MS Access or R (Section 2 Task Area 6, and Section 3 of Contract Level PWS)**

The mIBI shall be incorporated into an Access database so that sample and macroinvertebrate data entered into results tables can be converted to metrics, metric scores, and index values. The calculations shall be triggered by queries or forms and shall be presented in Access tables with an explanatory write up. Operation of the index calculation tool shall require basic knowledge of Access operations and query modifications might render the tool inoperable.

Along with the Index calculation tool the contractor shall submit a report indicating updates to the existing mIBI and write up of the process for Tasks 3-7 the contractor took to update the index.

#### **SubTask 8.1: Draft Report of mIBI Index for IEPA**

The contractor shall develop a draft report in MS word (2016) identifying all steps and information used to develop the updated index as identified in Tasks 3-7. Including the index. This shall include information from each task in this Task Order including but not be limited to type of data collected from the state, issues with any data reviewed, explanation of data not used if any, and how the data was used. The draft report shall include the data used and GIS and any additional graphics as needed. If Tables of data sets are to be added these may be as an Access Data base.

**SubTask 8.2: Final Report of the mIBI Index for IEPA**

The contractor shall submit a final report in MS word (2016) incorporating comments submitted by the TOCOR. This final report shall be submitted electronically. It may be submitted via an File Transfer Protocol (FTP) site or other appropriate method depending on the amount of data included. The final report shall be 508 compliant.

**SubTask 8.3: Index Calculation Tool in MS Access by TOCOR**

With the submittal of the Final Report the contractor shall submit an Index Calculation Tool in MS Access other format if it is determined by the contractor and TOCOR would be a better option base on the data. The contractor shall also submit information and documentation on the use of the tool in MS Word (2016).

**Task 8 Deliverables**

<b>Tasks</b>	<b>SubTasks</b>	<b>Deliverable</b>	<b>Due</b>
<b>8</b>	<b>8.1</b>	<b>Draft Report identifying all steps and information used to develop the updated index. Including the index.</b>	<b>Due eighteen (18) months of TO Award</b>
<b>8</b>	<b>8.2</b>	<b>Final Report incorporating comments received by EPA. The report will identify all steps and information used to develop the updated index. Including the index.</b>	<b>Due twenty-four (24) months of TO Award</b>
<b>8</b>	<b>8.3</b>	<b>Submittal of Index calculation tool in MS Access</b>	<b>Due twenty-four (24) months of TO Award</b>

**Task Order Summary of all Deliverables**

<b>Task No.</b>	<b>SubTask</b>	<b>Deliverable</b>	<b>Schedule</b>
<b>1</b>	<b>1.1</b>	<b>Communication/Kick-off call</b>	<b>Due five (5) days of TO Award</b>
<b>1</b>	<b>1.2</b>	<b>Monthly Calls</b>	<b>Monthly and/or as requested by the TOCOR</b>
<b>1</b>	<b>1.3</b>	<b>Monthly Technical Progress Reports</b>	<b>Monthly and/or as requested by the TOCOR</b>

<b>2</b>	<b>2.1</b>	<b>Draft QAPP</b>	<b>Due fifteen (15) days of TO Award</b>
<b>2</b>	<b>2.2</b>	<b>Final QAPP</b>	<b>Due ten (10) business days of receipt of the written comments on the draft QAPP</b>
<b>3</b>	<b>3.1</b>	<b>Compilation of Metric Calculation in Access or R.</b>	<b>Due five (5) months TO Award</b>
<b>4</b>	<b>4.1</b>	<b>Compilation of new GIS data in MS Access or MS Excel.</b>	<b>Due eight (8) months of TO Award</b>
<b>5</b>	<b>5.1</b>	<b>Confirmation of correlation with all disturbance categories</b>	<b>Due eleven (11) months of TO Award</b>
<b>6</b>	<b>6.1</b>	<b>Review of the data resampled in different configurations to test the idea that a whole-lake composite or specific habitat composites would yield precise and accurate assessments. Output show the different relationships.</b>	<b>Due fourteen (14) months of TO Award</b>
<b>7</b>	<b>7.1</b>	<b>Recalibration of all or part of the index.</b>	<b>Due sixteen (16) months of TO Award</b>
<b>8</b>	<b>8.1</b>	<b>Draft Report discussing all steps and information used to develop the updated index. Including the index.</b>	<b>Due eighteen (18) months of TO Award</b>
<b>8</b>	<b>8.2</b>	<b>Final Report incorporating comments received by EPA. The report will discuss all steps and information used to develop the updated index. Including the index.</b>	<b>Due twenty-four (24) months of TO Award</b>
<b>8</b>	<b>8.3</b>	<b>Submittal of Index calculation tool in MS Access requested by TOCOR</b>	<b>Due twenty-four (24) months of TO Award</b>

#### **ACCEPTANCE CRITERIA:**


The Contractor shall prepare high quality deliverables in accordance with academic standards. Deliverables shall be edited for grammar, spelling, and logic flow. The technical information shall be reasonably complete and presented in a logical, readable manner. Figures submitted shall be of high quality similar to presentations developed for national scientific forums and should be formatted as jpeg or png files. Text deliverables shall be provided in Microsoft Word 2016, Access, and must be 508 compliant.

<b>AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT</b>		1. CONTRACT ID CODE		PAGE 1 OF 2 PAGES	
2. AMENDMENT/MODIFICATION NO. P00001		3. EFFECTIVE DATE See Block 16C		5. PROJECT NO. (If applicable)	
6. ISSUED BY CAD		7. ADMINISTERED BY (If other than Item 6)		CODE	
US Environmental Protection Agency 26 West Martin Luther King Drive Mail Code: W136 Cincinnati OH 45268-0001					
8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code)		(x)		9A. AMENDMENT OF SOLICITATION NO.	
TETRA TECH, INC. Attn: George Townsend 10306 EATON PL STE 340 FAIRFAX VA 22030				9B. DATED (SEE ITEM 11)	
		x		10A. MODIFICATION OF CONTRACT/ORDER NO. EP-C-17-031 68HERC20F0036	
CODE 198549560		FACILITY CODE		10B. DATED (SEE ITEM 13) 10/28/2019	

CHECK ONE	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: <i>(Specify authority)</i> THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES <i>(such as changes in paying office, appropriation data, etc.)</i> SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).
	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:
X	D. OTHER <i>(Specify type of modification and authority)</i> BILATERAL AGREEMENT - NO COST NO POP EXTENSION - PWS AMEND 1, SLIGHT DATA SET ADJUSTMENT

DUNS Number: 198549560

Reason for Modification: Other Administrative Action - BILATERAL AGREEMENT - NO COST NO POP  
EXTENSION - PWS AMEND 1 (SEE ATTACHED), SLIGHT DATA SET ADJUSTMENT

15A. NAME AND TITLE OF SIGNER (Type or print)		16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)	
		Andrea Dehne	
15B. CONTRACTOR/OFFEROR	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA	16C. DATE SIGNED
(Signature of person authorized to sign)		 (Signature of Contracting Officer)	ELECTRONIC SIGNATURE 04/07/2020



<b>CONTINUATION SHEET</b>	REFERENCE NO. OF DOCUMENT BEING CONTINUED	PAGE	OF
	EP-C-17-031/68HERC20F0036/P00001	2	2

NAME OF OFFEROR OR CONTRACTOR  
TETRA TECH, INC.

ITEM NO. (A)	SUPPLIES/SERVICES (B)	QUANTITY (C)	UNIT (D)	UNIT PRICE (E)	AMOUNT (F)
	<p>Payment:</p> <p>RTP Finance Center US Environmental Protection Agency RTP-Finance Center (AA216-01) 109 TW Alexander Drive www2.epa.gov/financial/contracts Durham NC 27711</p> <p>Period of Performance: 11/01/2019 to 10/30/2020 Delivery-Invoice Payment Schedule shall not exceed a frequency greater than once a month and 90% of the task order price. Acceptance for invoicing is based on deliverable approval by the TOCOR. For efficient processing IAW FAR clause 52.232-32, performance based payment invoicing amounts will not be submitted until the TOCOR provides deliverable approval. The TOCOR will notify Tetra Tech within 14 days of submission of a deliverable of EPAs intention to approve or disapprove.</p> <p>TOCOR: Elizabeth Resek/(202)566-1228/resek.elizabeth@epa.gov ALTOCOR: Reuben Baris/(202)566-2683/baris.reuben@epa.gov</p>				

**PERFORMANCE WORK STATEMENT**  
**PR-OW-19-00585**  
**Contract #EP-C-17-031**  
**SOL #68HERC19R0080/TO # 68HERC20F0036**

**Amendment 1**

- I. Title:** Development of 2018-2019 Biosolids Biennial Review
- II. Period of Performance:** November 1, 2019 to October 30, 2020

**III. Task Order Contracting Officer Representative (TOCOR):**

Elizabeth Resek  
Health and Ecological Criteria Division  
Office of Water, Office of Science and Technology  
U.S. Environmental Protection Agency  
1200 Pennsylvania Avenue (4304T)  
Washington, DC 20460  
Tel: (202)566-1228, Fax: (202)566-1140  
[ressek.elizabeth@epa.gov](mailto:ressek.elizabeth@epa.gov)

**Alternate TOCOR:**

Reuben Baris  
(202)566-2683  
[baris.reuben@epa.gov](mailto:baris.reuben@epa.gov)

**IV. Background Information:**

Section 405(d) of the Clean Water Act (CWA) requires the EPA to review biosolids regulations every two years to identify additional pollutants that occur in biosolids and to regulate those pollutants if sufficient scientific evidence shows that they may harm (i.e., there is risk to) human health or the environment. The biennial review process is intended to fulfill the CWA requirement to identify additional pollutants that occur in biosolids every two years. It also provides the information and data needed to conduct risk assessments on the pollutants found. The EPA develops biennial reviews by collecting, reviewing and reporting publicly available information and data on the occurrence, human health and ecological effects, and fate and transport in the environment for pollutants that have been found in U.S. biosolids. While not listed as a biennial review, an extensive literature search was conducted and published in 2003, and 10 pollutants were identified and prioritized for risk assessment in response to the 2002 National Research Council of the National Academies report (68 FR 75531). Subsequent biennial reviews are posted to EPA's website for 2005, 2007, 2009, 2011, 2013 and 2015: <https://www.epa.gov/biosolids/biennial-reviews-sewage-sludge-standards>.

If needed for purposes of technical clarification, use of technical collaboration will be in writing and sent to the Contracting Officer and the Task Order Contract-Level COR.

## V. Objectives

This task order (TO) is to develop the 2018-2019 Biennial Review (See Task 2) and provide recommendations on improvements to the biennial review process (See Task 3).

## VI. Scope of Work

### Task 1: Communication, Prepare Monthly Progress and Financial Reports, Coordination and Notification

#### **SubTask 1.1: Communication/Kickoff Call**

The Contractor shall contact the TOCOR and schedule a kickoff project meeting.

#### **SubTask 1.2: Communication and development of a regular reporting schedule**

The Contractor shall establish communication with the TOCOR and develop a regular reporting schedule throughout the period of the TO.

### Task 1. Deliverables

Task	SubTasks	Deliverable	Due
1	1.1	Communication/Kick-off call	Within 3 days of TO Award
1	1.2	Regular reporting schedule	As requested by the TOCOR

### Task 2: Develop Biosolid Biennial Review for 2018 - 2019 Timeframe.

The contractor shall develop the biennial review by collecting, reviewing and reporting publicly available information and data from January 2018 through December 2019 on the occurrence, human health and ecological effects, and fate and transport in the environment for pollutants that have been found in U.S. biosolids. These data can be used to conduct future human health and ecological risk assessments. The contractor shall refer to the EPA's 2016-2017 Biennial Review for reference on the previous biennial review process: <https://www.epa.gov/sites/production/files/2019-06/documents/2016-2017-biosolids-biennial-review.pdf>

#### **SubTask 2.1: "Paper Review" – Identify, Review and Select Papers**

Conduct a literature review from January 2018 through December 2019 for articles published in English in peer-reviewed journals to identify chemicals and microbial pollutants previously found in biosolids (see Appendix A in the 2016-2017 Biennial Review) and chemicals and microbial pollutants newly identified in biosolids.

- 2.1.a. Bibliographic databases to be searched for the ~~2016-2017~~ 2018-2019 Biennial Review included: PubMed, Web of Science, and Proquest. ~~Toxicology Literature Online (TOXLINE), Fish, Fisheries, & Aquatic Biodiversity Worldwide, Environment Complete, CAB Abstracts, and Science Direct.~~ The searches for occurrence data should be limited to the U.S. and Canada. The contractor may recommend other databases which must be approved by the TOCOR prior to use. The TOCOR shall provide the contractor with citations and corresponding abstracts for searches designed and run by the EPA librarian in PubMed, Web of Science and Proquest. The

citations and abstracts will be provided electronically to the contractor using Endnote software. If the contractor is unable to obtain pertinent journal articles from Proquest, the EPA librarian shall assist in obtaining the articles.

- 2.1.b. Conference abstracts, reports, comments, letters and editorials were excluded in the 2016-2017 Biennial Review. The contractor may recommend their inclusion which must be approved by the TOCOR prior to use.
- 2.1.c. The search terms/strings used ~~in~~ for the ~~2016-2017~~ 2018-2019 Biennial Review shall be determined with the assistance of the EPA librarian and must be documented by the contractor and reported in the biennial review document. It may be altered by the contractor once approved by the TOCOR.
- 2.1.d. The contractor shall exclude papers when:
  - Countries had treatment technologies, regulatory requirements or soil types that were not comparable to the U.S. and Canada and reported only concentration data. Note that studies for countries that were not comparable to the U.S. and Canada but had other types of data (e.g., toxicity, fate and transport) were not excluded.
  - Only spiked concentration data were reported.
  - No evidence of the occurrence of new pollutants in biosolids and no new data for chemicals previously identified were reported.
  - The only reported data were for metals previously regulated in biosolids (40 CFR Part 503).
  - New classes of chemicals (e.g., nanoparticles) were found in biosolids but no data were available.

**SubTask 2.2: Chemical Review: Evaluate Data Availability for Chemicals to be Included in the Biennial Review**

- 2.2.a. For newly and previously identified chemicals in biosolids, data (e.g., human and ecological toxicity, and environmental fate and transport data) presented in papers from the literature search shall be systematically extracted, captured and documented in a data evaluation record (DER) provided by the TOCOR or similar document developed by the contractor and approved by the TOCOR.
- 2.2.b. The TOCOR shall provide the contractor with the list of data sources to be used for mining human health toxicity data.
- 2.2.c. The contractor shall use the ECOTOXicology knowledgebase (ECOTOX; U.S. EPA, 2018d) for all newly identified and existing chemicals to identify the number of papers and number of species, if any, that are available. NOTE: The EPA is in the process of determining the best approach for determining ecological endpoints that are to be used for ecological risk assessments. Reporting the number of papers and number of species shall be sufficient at this time.

2.2.d. For environmental fate and transport data, the contractor shall use the PHYSPROP database, which is incorporated in the Estimation Programs Interface (EPISuite™; U.S. EPA, 2017). Physical-chemical properties include:

- Molecular weight
- Solubility
- Vapor pressure
- Henry's law constant
- Log octanol-water partition coefficients (log K<sub>ow</sub>)
- Soil-water partitioning coefficients (K<sub>d</sub> and K<sub>oc</sub>)
- Degradation rates in various media
- Diffusivities in air and water
- Bioavailability

2.2.e. For many organic chemicals, uptake/transfer factors can be estimated using empirical relationships. Transfer factors of interest are:

- Air-to-plant transfer factors
- Root uptake factors for above-ground vegetation
- Root concentration factors (for root vegetables)
- Bioconcentration factors for fish
- Bioaccumulation factors for various plants and small fauna eaten by ecological receptors
- Bioconcentration factors for animal products (e.g., meat and milk)

2.2.f. The contractor is not required to perform a microbial review at this time.

**SubTask 2.3.: Reporting Process, Results and Conclusions**

2.3.a. The contractor shall include the process used to develop the biennial review, the data gleaned from the literature search and any conclusions drawn in the final biennial review.

2.3.b. The Contractor shall develop the draft Biennial Review.

2.3.c. The Contractor shall develop the final Biennial Review.

2.3.d. The contractor shall input all data and associated information obtained during the biennial review process into an Excel spreadsheet developed by the contractor, or other similar form ~~an Access database~~ provided by the TOCOR.

## Task 2. Deliverables

Task	SubTask	Deliverable	Due
2	2.1.a-d	Literature Search/Selection of Papers Complete	Two weeks after receiving final comments from TOCOR
2	2.2.a-f	Extraction of Data Complete	Two weeks after receiving final comments from TOCOR
2	2.3.b	Draft Biennial Review	Two weeks after receiving final comments from TOCOR
2	2.3.c	Final Biennial Review	Two weeks after receiving final comments from TOCOR
2	2.3.d	Input of all data gleaned from biennial review process complete	Completion of TO

## Task 3: Provide Recommendations for Biennial Review Process Improvements

The contractor shall provide the TOCOR with recommendations for improving the biennial review process, including but not limited to: literature search (e.g., search terms and strings), format, data sources, database, other. Recommendations shall be made to the TOCOR during the development of the 2018-2019 Biennial Review and incorporated if appropriate. Recommendations shall also be made for future biennial reviews.

### **SubTask 3.1.: Biennial Review Process Recommendations**

3.1.a. The contractor shall develop draft recommendations for improvements to the biennial review process (e.g., document organization/format, data sources, etc.)

3.1.b. The contractor shall develop final recommendations for improvements to the biennial review process (e.g., document organization/format, data sources, etc.)

## Task 3. Deliverables

Task	SubTask	Deliverable	Due
3	3.1.a	Draft Recommendations	60 days prior to end of TO
3	3.1.b	Final Recommendations	Two weeks after receiving final comments from TOCOR

## VII. Acceptance Criteria:

The Contractor shall prepare high quality deliverables. Deliverables shall be edited for grammar, spelling, and logic flow. The technical information shall be reasonably complete and presented in a logical, readable manner. Figures submitted shall be of high quality, similar to those in presentations developed for national scientific meetings and should be formatted as jpeg or png files. Additional requirements specific to this TO are as follows: Electronic deliverables must be in an original file format that can be supported by the EPA after the end of the Period of Performance of the TO. The standard office software at EPA is MS Office. Text deliverables shall be provided in Microsoft Word 2010 or compatible format.

<b>AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT</b>			1. CONTRACT ID CODE		PAGE OF PAGES 1 2		
2. AMENDMENT/MODIFICATION NO. P00002		3. EFFECTIVE DATE See Block 16C		4. REQUISITION/PURCHASE REQ. NO. PR-OW-20-00679		5. PROJECT NO. (If applicable)	
6. ISSUED BY CAD US Environmental Protection Agency 26 West Martin Luther King Drive Mail Code: W136 Cincinnati OH 45268-0001		CODE CAD		7. ADMINISTERED BY (If other than Item 6)		CODE	
8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code) TETRA TECH, INC. Attn: George Townsend 10306 EATON PL STE 340 FAIRFAX VA 22030				(X)		9A. AMENDMENT OF SOLICITATION NO.	
						9B. DATED (SEE ITEM 11)	
				X		10A. MODIFICATION OF CONTRACT/ORDER NO. EP-C-17-031 68HERC20F0036	
						10B. DATED (SEE ITEM 13) 10/28/2019	
CODE 198549560		FACILITY CODE					

**11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS**

☐ The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers ☐ is extended. ☐ is not extended.  
Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods: (a) By completing Items 8 and 15, and returning \_\_\_\_\_ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or electronic communication which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGEMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by letter or electronic communication, provided each letter or electronic communication makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA (If required)

See Schedule

**13. THIS ITEM ONLY APPLIES TO MODIFICATION OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.**

CHECK ONE	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.
X	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation data, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).
	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:
	D. OTHER (Specify type of modification and authority)

**E. IMPORTANT:** Contractor ☒ is not ☐ is required to sign this document and return \_\_\_\_\_ copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

DUNS Number: 198549560

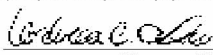
TOCOR: Elizabeth Resek Max Expire Date: 10/30/2020

LIST OF CHANGES:

Reason for Modification: Other Administrative Action - No Cost No PoP extension - Alternate COR/Project Officer changed to : Elyssa Arnold

Continued ...

Except as provided herein, all terms and conditions of the document referenced in Item 9 A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print)		16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print) Andrea Dehne	
15B. CONTRACTOR/OFFEROR  (Signature of person authorized to sign)	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA  (Signature of Contracting Officer)	16C. DATE SIGNED 08/14/2020

Previous edition unusable

<b>CONTINUATION SHEET</b>	REFERENCE NO. OF DOCUMENT BEING CONTINUED	PAGE	OF
	EP-C-17-031/68HERC20F0036/P00002	2	2

NAME OF OFFEROR OR CONTRACTOR  
TETRA TECH, INC.

ITEM NO. (A)	SUPPLIES/SERVICES (B)	QUANTITY (C)	UNIT (D)	UNIT PRICE (E)	AMOUNT (F)
	<p>Payment:</p> <p>RTP Finance Center US Environmental Protection Agency RTP-Finance Center (AA216-01) 109 TW Alexander Drive www2.epa.gov/financial/contracts Durham NC 27711</p> <p>Period of Performance: 11/01/2019 to 10/30/2020 Delivery-Invoice Payment Schedule shall not exceed a frequency greater than once a month and 90% of the task order price. Acceptance for invoicing is based on deliverable approval by the TOCOR. For efficient processing IAW FAR clause 52.232-32, performance based payment invoicing amounts will not be submitted until the TOCOR provides deliverable approval. The TOCOR will notify Tetra Tech within 14 days of submission of a deliverable of EPAs intention to approve or disapprove.</p> <p>TOCOR: Elizabeth Resek/(202)566-1228/resek.elizabeth@epa.gov ALTOCOR: Elyssa Arnold/(202)-566-1189/arnold.elyssa@epa.gov</p>				



<b>AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT</b>				1. CONTRACT ID CODE		PAGE OF PAGES	
						1      2	
2. AMENDMENT/MODIFICATION NO.		3. EFFECTIVE DATE		4. REQUISITION/PURCHASE REQ. NO.		5. PROJECT NO. (If applicable)	
P00003		See Block 16C					
6. ISSUED BY		CODE		7. ADMINISTERED BY (If other than Item 6)		CODE	
CAD							
US Environmental Protection Agency 26 West Martin Luther King Drive Mail Code: W136 Cincinnati OH 45268-0001							
8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code)				(X)			
TETRA TECH, INC. Attn: John Hochheimer 10306 EATON PL STE 340 FAIRFAX VA 22030							
				9A. AMENDMENT OF SOLICITATION NO.			
				9B. DATED (SEE ITEM 11)			
				X 10A. MODIFICATION OF CONTRACT/ORDER NO.			
				EP-C-17-031			
				68HERC20F0036			
				10B. DATED (SEE ITEM 13)			
				10/28/2019			
CODE 198549560		FACILITY CODE					
<b>11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS</b>							
<input type="checkbox"/> The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers <input type="checkbox"/> is extended. <input type="checkbox"/> is not extended. Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods: (a) By completing Items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or electronic communication which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGEMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by letter or electronic communication, provided each letter or electronic communication makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.							
12. ACCOUNTING AND APPROPRIATION DATA (If required)							
See Schedule							
<b>13. THIS ITEM ONLY APPLIES TO MODIFICATION OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.</b>							
CHECK ONE	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.						
X	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation data, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).						
	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:						
	D. OTHER (Specify type of modification and authority)						
<b>E. IMPORTANT:</b> Contractor <input checked="" type="checkbox"/> is not <input type="checkbox"/> is required to sign this document and return _____ copies to the issuing office.							
14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)							
DUNS Number: 198549560							
TOCOR: Elizabeth Resek Max Expire Date: 10/30/2020							
The purpose of this modification is to incorporate the attached EPA blanket administrative modification signed by Raoul Scott on July 30, 2020. All other terms and conditions remain unchanged.							
Payment:							
Period of Performance: 11/01/2019 to 10/30/2020							
Delivery-Invoice Payment Schedule shall not exceed a frequency greater than once a month and 90% of the task order price. Acceptance for invoicing is based on deliverable approval by the TOCOR. For efficient processing IAW FAR clause 52.232-32, performance based payment invoicing amounts will not be submitted until the TOCOR provides deliverable approval. The Continued ...							
Except as provided herein, all terms and conditions of the document referenced in Item 9 A or 10A, as heretofore changed, remains unchanged and in full force and effect.							
15A. NAME AND TITLE OF SIGNER (Type or print)				16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)			
				Andrea Dehne			
15B. CONTRACTOR/OFFEROR		15C. DATE SIGNED		16B. UNITED STATES OF AMERICA		16C. DATE SIGNED	
				 (Signature of Contracting Officer)		10/09/2020 ELECTRONIC SIGNATURE	
(Signature of person authorized to sign)							

NAME OF OFFEROR OR CONTRACTOR  
TETRA TECH, INC.

ITEM NO. (A)	SUPPLIES/SERVICES (B)	QUANTITY (C)	UNIT (D)	UNIT PRICE (E)	AMOUNT (F)
	TOCOR will notify Tetra Tech within 14 days of submission of a deliverable of EPAs intention to approve or disapprove.  TOCOR: Elizabeth Resek/(202)566-1228/resek.elizabeth@epa.gov ALTOCOR: Elyssa Arnold/(202)-566-1189/arnold.elyssa@epa.gov				

<b>AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT</b>				1. CONTRACT ID CODE		PAGE OF PAGES	
2. AMENDMENT/MODIFICATION NUMBER		3. EFFECTIVE DATE 08/13/2020		4. REQUISITION/PURCHASE REQUISITION NUMBER		5. PROJECT NUMBER (If applicable)	
6. ISSUED BY Raoul D. Scott, Director OMS/ARM/OAS/Policy, Training and Oversight Division US Environmental Protection Agency, Mail Code 3802R 1200 Pennsylvania Avenue, NW Washington, DC 20004		7. ADMINISTERED BY (If other than Item 6)		CODE			
8. NAME AND ADDRESS OF CONTRACTOR (Number, street, county, State and ZIP Code)  To All EPA Contractors				<input checked="" type="checkbox"/> (X)		9A. AMENDMENT OF SOLICITATION NUMBER	
				<input type="checkbox"/>		9B. DATED (SEE ITEM 11)	
				<input checked="" type="checkbox"/> (X)		10A. MODIFICATION OF CONTRACT/ORDER NUMBER To all EPA Contracts and Orders	
				<input type="checkbox"/>		10B. DATED (SEE ITEM 13)	
CODE		FACILITY CODE					

**11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS**

☐ The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers ☐ is extended. ☐ is not extended.

Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods:  
 (a) By completing items 8 and 15, and returning \_\_\_\_\_ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted;  
 or (c) By separate letter or electronic communication which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by letter or electronic communication, provided each letter or electronic communication makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA (If required)

**13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS.  
IT MODIFIES THE CONTRACT/ORDER NUMBER AS DESCRIBED IN ITEM 14.**

CHECK ONE	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NUMBER IN ITEM 10A.
<input type="checkbox"/>	
<input checked="" type="checkbox"/> (X)	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation data, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).
<input type="checkbox"/>	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:
<input type="checkbox"/>	D. OTHER (Specify type of modification and authority)

**E. IMPORTANT:** Contractor ☒ is not ☐ is required to sign this document and return \_\_\_\_\_ copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

This contract/order is being modified in accordance with the applicability instructions in interim FAR Case 2019-009, and FAR 4.2105, requiring contracting officers to include FAR clause 52.204-25, Prohibition on Contracting for Certain Telecommunications and Video Surveillance Services or Equipment.

See attached for the full text version of FAR 52.204-25. Contractor Acknowledgment of receipt required.

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print)		16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print) Raoul D. Scott, Director Policy, Training and Oversight Division	
15B. CONTRACTOR/OFFEROR	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA  RAOUL SCOTT Digitally signed by RAOUL SCOTT Date: 2020.07.30 11:40:17 -04'00'	16C. DATE SIGNED
(Signature of person authorized to sign)		(Signature of Contracting Officer)	

Previous edition unusable

## **52.204-25 Prohibition on Contracting for Certain Telecommunications and Video Surveillance Services or Equipment.**

As prescribed in 4.2105(b) and in the applicability instructions in interim FAR Case 2019-009, insert the following clause:

### **Prohibition on Contracting for Certain Telecommunications and Video Surveillance Services or Equipment (Aug 2020)**

(a) Definitions. As used in this clause—

*Backhaul* means intermediate links between the core network, or backbone network, and the small subnetworks at the edge of the network (e.g., connecting cell phones/towers to the core telephone network). Backhaul can be wireless (e.g., microwave) or wired (e.g., fiber optic, coaxial cable, Ethernet).

*Covered foreign country* means The People's Republic of China.

*Covered telecommunications equipment or services* means—

(1) Telecommunications equipment produced by Huawei Technologies Company or ZTE Corporation (or any subsidiary or affiliate of such entities);

(2) For the purpose of public safety, security of Government facilities, physical security surveillance of critical infrastructure, and other national security purposes, video surveillance and telecommunications equipment produced by Hytera Communications Corporation, Hangzhou Hikvision Digital Technology Company, or Dahua Technology Company (or any subsidiary or affiliate of such entities);

(3) Telecommunications or video surveillance services provided by such entities or using such equipment; or

(4) Telecommunications or video surveillance equipment or services produced or provided by an entity that the Secretary of Defense, in consultation with the Director of National Intelligence or the Director of the Federal Bureau of Investigation, reasonably believes to be an entity owned or controlled by, or otherwise connected to, the government of a covered foreign country.

*Critical technology* means—

(1) Defense articles or defense services included on the United States Munitions List set forth in the International Traffic in Arms Regulations under subchapter M of chapter I of title 22, Code of Federal Regulations;

(2) Items included on the Commerce Control List set forth in Supplement No. 1 to part 774 of the Export Administration Regulations under subchapter C of chapter VII of title 15, Code of Federal Regulations, and controlled-

(i) Pursuant to multilateral regimes, including for reasons relating to national security, chemical and biological weapons proliferation, nuclear nonproliferation, or missile technology; or

(ii) For reasons relating to regional stability or surreptitious listening;

(3) Specially designed and prepared nuclear equipment, parts and components, materials, software, and technology covered by part 810 of title 10, Code of Federal Regulations (relating to assistance to foreign atomic energy activities);

(4) Nuclear facilities, equipment, and material covered by part 110 of title 10, Code of Federal Regulations (relating to export and import of nuclear equipment and material);

(5) Select agents and toxins covered by part 331 of title 7, Code of Federal Regulations, part 121 of title 9 of such Code, or part 73 of title 42 of such Code; or

(6) Emerging and foundational technologies controlled pursuant to section 1758 of the Export Control Reform Act of 2018 (50 U.S.C. 4817).

*Interconnection arrangements* means arrangements governing the physical connection of two or more networks to allow the use of another's network to hand off traffic where it is ultimately delivered (e.g., connection of a customer of telephone provider A to a customer of telephone company B) or sharing data and other information resources.

*Reasonable inquiry* means an inquiry designed to uncover any information in the entity's possession about the identity of the producer or provider of covered telecommunications equipment or services used by the entity that excludes the need to include an internal or third-party audit.

*Roaming* means cellular communications services (e.g., voice, video, data) received from a visited network when unable to connect to the facilities of the home network either because signal coverage is too weak or because traffic is too high.

*Substantial or essential component* means any component necessary for the proper function or performance of a piece of equipment, system, or service.

(b) Prohibition. (1) Section 889(a)(1)(A) of the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Pub. L. 115-232) prohibits the head of an executive agency on or after August 13, 2019, from procuring or obtaining, or extending or renewing a contract to procure or obtain, any equipment, system, or service that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system. The Contractor is prohibited from providing to the Government any equipment, system, or service that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system, unless an exception at paragraph (c) of this clause applies or the covered telecommunication equipment or services are covered by a waiver described in FAR 4.2104.

(2) Section 889(a)(1)(B) of the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Pub. L. 115-232) prohibits the head of an executive agency on or after August 13, 2020, from entering into a contract, or extending or renewing a contract, with an entity that uses any equipment, system, or service that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system, unless an exception at paragraph (c) of this clause applies or the covered telecommunication equipment or services are covered by a waiver described in FAR 4.2104. This prohibition applies to the use of covered telecommunications equipment or services, regardless of whether that use is in performance of work under a Federal contract.

(c) *Exceptions.* This clause does not prohibit contractors from providing—

(1) A service that connects to the facilities of a third-party, such as backhaul, roaming, or interconnection arrangements; or

(2) Telecommunications equipment that cannot route or redirect user data traffic or permit visibility into any user data or packets that such equipment transmits or otherwise handles.

(d) Reporting requirement.

(1) In the event the Contractor identifies covered telecommunications equipment or services used as a substantial or essential component of any system, or as critical technology as part of any system, during contract performance, or the Contractor is notified of such by a subcontractor at any tier or by any other source, the Contractor shall report the information in paragraph (d)(2) of this clause to the Contracting Officer, unless elsewhere in this contract are established procedures for reporting the information; in the case of the Department of Defense, the Contractor shall report to the website at <https://dibnet.dod.mil>. For indefinite delivery contracts, the Contractor shall report to the Contracting Officer for the indefinite delivery contract and the Contracting Officer(s) for any affected order or, in the case of the Department of Defense, identify both the indefinite delivery contract and any affected orders in the report provided at <https://dibnet.dod.mil>.

(2) The Contractor shall report the following information pursuant to paragraph (d)(1) of this clause

(i) Within one business day from the date of such identification or notification: the contract number; the order number(s), if applicable; supplier name; supplier unique entity identifier (if known); supplier Commercial and Government Entity (CAGE) code (if known); brand; model number (original equipment manufacturer number, manufacturer part number, or wholesaler number); item description; and any readily available information about mitigation actions undertaken or recommended.

(ii) Within 10 business days of submitting the information in paragraph (d)(2)(i) of this clause: any further available information about mitigation actions undertaken or recommended. In addition, the Contractor shall describe the efforts it undertook to prevent use or submission of covered telecommunications equipment or services, and any additional efforts that will be incorporated to prevent future use or submission of covered telecommunications equipment or services.

(e) *Subcontracts*. The Contractor shall insert the substance of this clause, including this paragraph (e) and excluding paragraph (b)(2), in all subcontracts and other contractual instruments, including subcontracts for the acquisition of commercial items.

(End of clause)

<b>AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT</b>		1. CONTRACT ID CODE		PAGE OF PAGES	
				1 2	
2. AMENDMENT/MODIFICATION NO. P00004		3. EFFECTIVE DATE See Block 16C		4. REQUISITION/PURCHASE REQ. NO. PR-OW-21-00169	
5. PROJECT NO. (If applicable)					
6. ISSUED BY CODE CAD US Environmental Protection Agency 26 West Martin Luther King Drive Mail Code: W136 Cincinnati OH 45268-0001		7. ADMINISTERED BY (If other than Item 6) CODE			
8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code) TETRA TECH, INC. Attn: John Hochheimer 10306 EATON PL STE 340 FAIRFAX VA 22030		(x)		9A. AMENDMENT OF SOLICITATION NO.	
				9B. DATED (SEE ITEM 11)	
		x		10A. MODIFICATION OF CONTRACT/ORDER NO. EP-C-17-031 68HERC20F0036	
				10B. DATED (SEE ITEM 13) 10/28/2019	
CODE 198549560		FACILITY CODE			

**11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS**

☐ The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers ☐ is extended. ☐ is not extended.  
Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods: (a) By completing Items 8 and 15, and returning \_\_\_\_\_ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or electronic communication which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGEMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by letter or electronic communication, provided each letter or electronic communication makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA (If required)

See Schedule

**13. THIS ITEM ONLY APPLIES TO MODIFICATION OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.**

CHECK ONE	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation data, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).
	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:
X	D. OTHER (Specify type of modification and authority) BILATERAL AGREEMENT - CONFIRM DELIVERABLE RECEIPT IN FULL FOR TASK ORDER CLOSEOUT

**E. IMPORTANT:** Contractor ☐ is not ☒ is required to sign this document and return 1 copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

DUNS Number: 198549560

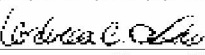
TOCOR: Elizabeth Resek Max Expire Date: 10/30/2020

LIST OF CHANGES:

Reason for Modification: Confirm Order Close Out

Continued ...

Except as provided herein, all terms and conditions of the document referenced in Item 9 A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print)		16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print) Andrea Dehne	
15B. CONTRACTOR/OFFEROR  (Signature of person authorized to sign)	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA  (Signature of Contracting Officer)	16C. DATE SIGNED 03/17/2021

Previous edition unusable



<b>CONTINUATION SHEET</b>	REFERENCE NO. OF DOCUMENT BEING CONTINUED	PAGE	OF
	EP-C-17-031/68HERC20F0036/P00004	2	2

NAME OF OFFEROR OR CONTRACTOR  
TETRA TECH, INC.

ITEM NO. (A)	SUPPLIES/SERVICES (B)	QUANTITY (C)	UNIT (D)	UNIT PRICE (E)	AMOUNT (F)
	<p>Payment:</p> <p>RTP Finance Center US Environmental Protection Agency RTP-Finance Center (AA216-01) 109 TW Alexander Drive www2.epa.gov/financial/contracts Durham NC 27711</p> <p>Period of Performance: 11/01/2019 to 10/30/2020 Delivery-Invoice Payment Schedule shall not exceed a frequency greater than once a month and 90% of the task order price. Acceptance for invoicing is based on deliverable approval by the TOCOR. For efficient processing IAW FAR clause 52.232-32, performance based payment invoicing amounts will not be submitted until the TOCOR provides deliverable approval. The TOCOR will notify Tetra Tech within 14 days of submission of a deliverable of EPAs intention to approve or disapprove.</p> <p>TOCOR: Elizabeth Resek/(202)566-1228/resek.elizabeth@epa.gov ALTOCOR: Elyssa Arnold/(202)-566-1189/arnold.elyssa@epa.gov</p>				